

REMARKS

I. Introduction

Claims 1-17 and 25-33 had been previously withdrawn from consideration. Thus, claims 18-24 and 34-46 are pending in this application. In view of the following remarks, it is respectfully submitted that all of the pending claims are in condition for allowance.

II. Claim Rejections - 35 U.S.C. 103

Claims 18-24 and 34-46 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Published Application No. 2002/0038235 to Musafia et al. ("*Musafia*") in view of either the publication entitled "A PC-based Real Time Measurement System for Factory Automation on quality Control and Production Control" by Lin et al. ("*Lin*") or the publication entitled "Intelligent Monitoring System Used to Control Asynchronous Production Systems" by Szabados ("*Szabados*"). *Office Action*, page 2.

Independent claim 18 recites "collecting real time equipment information from a production line." Applicant relied on this limitation in responding to the first Office Action, but the Examiner had rejected the argument. Applicant respectfully disagrees and will further elaborate on this limitation, and the reasons the pending claim is distinguishable from the cited art.

Although the references cited by the Examiner include production data of equipment being used in production lines, the references only disclose information as to the productivity and/or efficiency of the equipment. Thus, the data being collected is limited to the number of units produced. "The present information comprises a system and method for monitoring and optimizing product or service output." *Musafia*, ¶ [0005]. *Musafia* goes on to perform a calculation of plant productivity that incorporates the number of jobs performed by the

workers via the number of units produced over a given period of time (*Musafia*, ¶¶ [0062]-[0083]), but the methodology in *Musafia* gives no insight as to *how* the machines are running. Nowhere in *Musafia* is there any mention of data being collected regarding the lower-level operation and functioning of the equipment. The cites to *Musafia* that the Examiner has given (*April 18, 2005 Office Action*, pages 2-4) show that *Musafia* does collect data from equipment in a production line. However, the data that is being collected focuses on a high-level view of the production, taking into account productivity of the equipment and workers, material costs, etc. No low-level data giving insight into the operation of the equipment is disclosed.

Similar to *Musafia*, *Szabados* discloses a “‘Bird’s eye view’ of the plant production system.” (*Szabados*, page 35). Once again, the article makes no mention of the collection of low-level data which would allow inspection of the performance of specific machines. The publication goes on to state that the system provides “unprocessed numerical indicators (system and subsystem input/output counts and bank levels)...on-line throughput models...[and] processed numerical indicators in report format (average cycle-time, job-per-hour-rate, number of undercycles, number of overcycles, etc.).” *Szabados*, page 35. This data being collected only deals with the rate of production of the equipment. These statements show *Szabados*’ emphasis on collecting data regarding the number of units produced over a specified time-period, but fails to address the collection of data regarding how equipment had performed during production. No data is collected regarding the performance and operation of the equipment in the production line.

With regard to *Lin*, as the Examiner points out, the system disclosed is “to monitor *quantities* of all check points in production lines.” (emphasis added) *Lin*, Abstract. Once again, the system described in this article monitors the number of units being produced and does not collect any data revealing the performance of any of the equipment being used on the production line. Data that is collected and analyzed in *Lin* include: “(1) the input quantity...(2) quality and quantity of output products...(3) total labor...(4) work-man-hour throughput production...(5) operational efficiency.” *Lin*, page 57. All of these data categories deal with the

number of units produced as a function of the pre-production materials and labor used in the production process. Lin fails to make any mention of the performance and operation of the equipment being used in production. Furthermore, although "measurements" are taken in the system described in Lin, these measurements refer to the testing being performed on the units being produced. "The function for bad data elimination will be...to mark the bad data, and put the bad product to return conveyor." *Lin*, page 58. Thus, these measurements are not taken from the equipment being used on production, but rather on the products being produced as a means to implement a quality control measure by automating the testing and returning of defective products. Thus, the data being collected and analyzed in Lin once again only deals with the output of the machines, and the quality of the units produced, and not the functioning of the equipment in production.

In contrast to the references cited by the Examiner, the "equipment information" that the present invention teaches goes beyond these references by collecting data concerning the operation and performance of the equipment. The "equipment information" disclosed by the present invention includes specific data showing the intricate operation of the machines rather than merely reporting the number of products being produced, and the efficiency therefrom. A simple example of this equipment information is the "operation mode data." *Specification*, ¶ [0004]. This could be as simple as whether the machine is "on" or "off". Although this simple example may seem insignificant, if a machine were "off", the systems disclosed by the references would only collect data telling the operator that the specific equipment had produced no units. However, in the present invention, the operator would be able to discern why no units were produced by that specific equipment. Additional equipment specific data that is collected by the present system includes "diagnostic information for the machine such as electrical load, pressure, temperature, etc." *Specification*, ¶ [0017]. This type of information and data gives insight into the performance of the machines, and would allow the operator to perform timely maintenance, possibly avoiding having a complete shutdown of the equipment. Furthermore, if a machine happened to be "off" as in the previous example, and it was determined that the machine had broken down, having this data would allow the operator to more expediently troubleshoot and

repair the machine. Other types of "equipment information" that is collected and analyzed and thus taught by the present invention include, but are not limited to: "temperature, pressure, level, flow, limit...pressure instruments, differential pressure instruments, thermocouple inputs, resistive temperature device (RTD) inputs, etc." *Specification*, ¶[0036]. The present invention also discloses a system where this type of information can be verified by data from independent instruments. *Specification*, ¶[0054]. This functionality is not disclosed by Musafia, Szabados or Lin, alone or in combination. Although the three references disclose methods that collect and analyze production data from equipment on a production line that allows the operator to see the production and efficiency of the equipment, none relate to the performance and operation of such equipment.

Thus, the Applicant respectfully submits that Musafia, Lin and Szabados, either alone or in combination, do not teach or suggest "collecting real time equipment information from a production line" as recited in claim 18. Accordingly, the Applicant respectfully requests the Examiner to withdraw the rejection of claim 18 and all claims depending therefrom (19-24 and 34-42).


Independent claim 43 recites the same limitation as claim 18, *i.e.*, "collecting real time equipment information." Accordingly for the same reasons described above with respect to claim 18, the Applicant respectfully requests the Examiner to withdraw the rejection of claim 43 and all claims depending therefrom (44-46).

CONCLUSION

In light of the foregoing, the Applicant respectfully submits that all of the pending claims are in condition for allowance. All issues raised by the Examiner have been addressed, an early and favorable action on the merits is earnestly solicited.

Respectfully submitted,

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